- Behavioral economics (theory from Varian ch.30)
  - APPLICATION
    - **Democratization:** A&R. Actor-based approach as opposse to structural approach in answering why countries democratize and why democracies collapse etc.
    - **International trade:** why making trade agreement, etc. explaining by the psychology of leaders
    - Karan's Behavioral econ paper
      - Behavioral spillover: 1 simple game + 1 complex game. --> people get strategy for the simple game and apply on complex game
      - Saving: if people save after they get the money, they will save less. If company coerce people to save, people won't be unhappy.
  - **Too many choices can be bad.** experiment: consumers will purchase at a counter that offer less choice of jam
  - **Constructed preference:** preference is not a guid to choice. But it is "discovered" through making choice. "You don't know your preference until you make a choice"
  - **Facing Uncertainty:** further against conventional economic theory
    - **Law of small numbers:** People are overly influenced by small sample, particularly if they experience it themselves.
    - **Asset Integration vs. Loss aversion**
      - Conventional theory: people care about integrated total asset.
      - Behavior economics: people are Loss-averseed. They are particularly against changing from status quo.
      - Sunk cost: Should not have affected future choices. But people are not good at "forgetting" about sunk cost.
    - **Time inconsistency:** People discount long-term future more heavily than short-term future. So when the "future" really comes. they will change their ideas.
  - Self-control: people are not good at controlling themselves. example: procrastination, overcommit
  - **Framing effect:** the issue is framed positively/ negatively --> different choice.
  - **Anchoring effect:** people's choice can be influenced by completely spurious information. Example: MBA students first asked if they will purchase a bottle of wine at their SSN number number then asked the price they will bid for the price. Higher SSN --> higher bid
  - **Bracketing:** peopling choosing not-in-a-rush prefers variety. People making instant choice follow habit
  - **Strategic interaction vs social norm:** Game theory solution inconsistent with choice in lab. Example: ultimatum game. By rationality, people should accept any small amount offered. But not true, because people have "fairness" norm.

- Trade-off
  - **Application:** "Preference formation" in the "Breadth of Knowledge". The five types of models. Welfare as redistribution vs welfare as insurance.
  - Inter-temporal tradeoff
    - **The Intertemporal budget constraint:** can be expressed in terms of present value or future value. i.e. express the value of income and consumption at every period in terms of the value in current or future.
    - **The simplest model:** two periods. (c1, c2) -- current and future consumption; (m1, m2) -- current and future consumption
    - What affect individuals' discount of future income?
      - nominal interest rate (r)
      - Inflation (pi) --> real interest rate = (1+r)/(1+pi) approximates 1+r
      - tax
    - **Bond:** if the coupon amount is x, given in infinite length of period, then the present value of the bond is x/r. r is some benchmark discount rate (for instance, the interest rate, rate of return of long-term bond, etc.)
    - APPLICATION: Macro. Preference formation (esp. in redistribution)
  - Pairs of goods
    - **Normal vs inferior:** Normal goods demand increases with income. Inferior goods demand decreases with increase of income
    - **Luxury vs necessary:** The proportion of luxury goes up faster than that of income. The reverse for necessary good. For instance. 1% increase of income --> 2% increased demand for good X --> Good X is luxury good.
    - **Ordinary vs Giffen:** Ordinary good demand decreases with its OWN price. Giffen good demands increases with its OWN price
    - **Net substitute vs net complement:** Demand of Good A increases with increased price of Good B. Then A and B are net substitutes.
  - Utility function and optimal choices for...
    - Perfect substitute --> linear utility function --> choose the cheaper one. if same price, choose any combination
    - Perfect complement --> consume same quantity of the two goods. u(x1, x2) = min{x1, x2}
    - Cobb-douglas. Most commonly used.
    - **Other:** quasi-linear utility function. u(x1, x2) = v(x1) + x2. Used when x2 is a necessary, such as water. There is a limit up to which the consumption of this good no longer increases utility. e.g. public good water pipes.
  - Uncertainty and Insurance
    - Uncertainty. "taking the gambles"
      - Expected utility function (von Neumann-Morgenstern utility function.)
        - This is based on some assumptions. not always true. In behavior economics this is not true.
      - Risk aversion/ neutral/ seeking. example. Prob = 0.2 you get **$10**, Prob = 0.8 you get **$1**. Your utility function is u($)
        - Risk averse: 0.2 * u(10) + 0.8 * u(1) **<** u(0.2 * 10 + 0.8 * 1)
        - Risk neutral: 0.2 * u(10) + 0.8 * u(1) **=** u(0.2 * 10 + 0.8 * 1)
        - Risk seeking: 0.2 * u(10) + 0.8 * u(1) **>** u(0.2 * 10 + 0.8 * 1)
      - Risk premium. Certain equivalent (see graphs)
        - Risk premium
        - Certainty equivalent: You offer me $x for certain, then I'm indifferent between taking the gamble and taking the money you offer.
    - Insurance: if people cannot choose whether to take the risk or not (i.e. cannot choose whether to join the gamble) --> Buy insurance. (related to preferences formation piece that treats welfare as insurance)